1. **CURRENT RISKS (Region 6, with supplement from OLEM)**. What chemical(s) were involved in the overnight explosion at the Arkema plant in Crosby, and how toxic are the resulting air releases?

   ***The Arkema facility response is currently addressing nine (9) containers that have been loaded with 38,000 pounds of organic peroxide that needs refrigeration. Also, there is a warehouse with approximately 1,000,000 lbs of a different peroxide that does not need refrigeration. The Region 6 aerial reconnaissance plane conducted monitoring for a plume at the release site at 7:30 am CST. The aircraft is capable of measuring 78 different chemicals, including peroxides. This data will be available to unified command for release assessment. In addition, an EPA On-Scene Coordinator (OSC) and Technical Assistance Contract Team are meeting up with the Harris County Hazardous Material Team at the site and will integrate into unified command at the scene. The EPA Team will conduct air monitoring for peroxide and sulfur dioxide.***

   ***The main hazard with uncontrolled organic peroxides is their instability. They are dangerously reactive and can catch fire or explode upon exposure to heat, friction, mechanical shock, or due to combination with incompatible materials. The main danger to people in the vicinity will be blast.***

   ***Also, some organic peroxides are highly toxic, such that acute exposure (inhalation, dermal, or ingestion) could cause severe injury and death. However, in the Arkema situation, this is unlikely to be the main hazard, unless authorities choose to send personnel into the site.***

   ***Potential health effects from exposure to peroxide compounds are anticipated if ingested, inhaled, or from skin exposure. If the peroxide solution is concentrated (greater than 10%) ingesting could cause oxygen to be released internally and could cause distension, gastric or intestinal perforation, as well as air to enter the blood stream. This could be fatal.***

   ***If high concentrations of peroxides are present in the air and inhaled there is a potential of severe irritation of the lungs and throat. If skin exposure to direct product it could cause severe skin burns immediately and require immediate treatment.***

   ***If direct product is to the eye, severe eye damage is possible including loss of vision.***

   ***When the products burn carbon oxides and hazardous organic compounds are formed. These compounds have the same effects as listed above for peroxides.***

2. **FUTURE RISKS (Region 6).** What do we know about what chemical(s) are at future risk of explosion? Check all available data sources.

   ***Potential estimate for the burning tank containing organic peroxides is approximately 38 hours of continued burning. The event may cause other nearby 8 similar tanks with similar product to ignite.***

***Arkema is a Risk Management Plan (RMP) facility. It manufactures liquid organic peroxides and two substances, sulfur dioxide (anhydrous) and 2-methylpropene are present at, or above, the minimum threshold quantity for RMP applicability. There have been no accidental off-site releases of applicable RMP chemicals from the facility in the previous five years.***

a. Where on-site are those chemicals – how many containers, how close, etic.

***The company stores chemicals throughout the facility. 8 containers with peroxides are located in close proximity to each other.***

b. What could happen to those chemicals (fire, explosion, etc), and what are the dangers? Explain.

***Additional explosions and fires are possible. Warehouse and facility is reported by facility representative to contain up to 1 million pounds of dry organic peroxide. Facility believe these materials will not be endangered by the ongoing fire.***

3. **NEXT STEPS WE CAN TAKE (Region 6 and OLEM jointly, and discussion by all**) What can we do to prepare against these future risks?

a. Monitoring. What are ASPECT's capabilities? Are they enough, or do we need to order Arkema to monitor?
   ***See attached ASPECT report***
b. Preparedness. Beside evacuation, what technical steps can we do to prevent an explosion?
c. Response. What assets can be pre-positioned, including what can we order Arkema to pre-position?

***The peroxide in the containers is too unstable for entry into the plant. The EPA team will not be able to access the site until all 9 containers have exploded and floodwaters have receded. This is expected to occur over the next several days. Once the remaining 8 containers have exploded, the EPA Team will monitor the air at the site to determine when contaminant levels in the air have dropped to acceptable levels for first responders to initiate entry and assessment activities in and around the plant. Assessment of safety will include measurement of contaminant levels in soil and spills and the integrity of the warehouse. The Team will remain in Unified Command around the clock until such time as the situation is stabilized and local authorities determine the facility no longer poses a threat to the surrounding community and can be reopened.***